We claim:

1. A method of diagnosing irritable bowel syndrome, fibromyalgia, chronic fatigue syndrome, depression, attention deficit/hyperactivity disorder, an autoimmune disease, or Crohn's disease, comprising:

detecting the presence of small intestinal bacterial overgrowth in a human subject having at least one symptom associated with a suspected diagnosis of irritable bowel syndrome, fibromyalgia, chronic fatigue syndrome, depression, attention deficit/hyperactivity disorder, an autoimmune disease, or Crohn's disease, whereby the suspected diagnosis of irritable bowel syndrome, fibromyalgia, chronic fatigue syndrome, depression, attention deficit/hyperactivity disorder, an autoimmune disease, or Crohn's disease is corroborated by the presence of small intestinal bacterial overgrowth.

2. The method of Claim 1, wherein the autoimmune disease is multiple sclerosis or systemic lupus erythematosus.

3. The method of Claim 1, wherein detecting the presence of a bacterial overgrowth is by analyzing the content of a gas mixture, said gas mixture being at least partially produced by the intestinal microflora of said human subject and being exhaled by said human subject after ingesting a controlled quantity of a substrate.

4. The method of Claim 3, wherein the substrate is an isotope-labeled sugar or a sugar that is incompletely digested by a human.

5. The method of Claim 4, wherein the sugar is glucose, lactose, lactulose or xylose.

6. The method of Claim 3, wherein the content of methane, carbon dioxide, or hydrogen gas in the exhaled gas mixture is analyzed.

7. The method of Claim 3, wherein analyzing the exhaled gas mixture is by gas chromatography.

8. The method of Claim 4, wherein the sugar is an isotope-labeled sugar; and analyzing the exhaled gas mixture is by mass spectrometry or radiation detection.

9. The method of Claim 8, wherein the content of methane, hydrogen or carbon dioxide in the exhaled gas mixture is analyzed.

10. The method of Claim 1, wherein detecting the presence of a bacterial overgrowth is by intestinal sampling from said human subject.

11. The method of Claim 10, wherein sampling is of cellular, fluid, fecal, or gaseous matter contained by the intestinal lumen or comprising part of the lumenal wall.

12. A method of treating irritable bowel syndrome, fibromyalgia, chronic fatigue syndrome, depression, attention deficit/hyperactivity disorder, an autoimmune disease, or Crohn's disease, comprising:

detecting the presence of small intestinal bacterial overgrowth in a human subject having at least one symptom associated with a suspected diagnosis of irritable bowel syndrome, fibromyalgia, chronic fatigue syndrome, depression, attention deficit/hyperactivity disorder, an autoimmune disease, or Crohn's disease; and at least partially eradicating the bacterial overgrowth, whereby the symptom(s) is improved.

13. The method of Claim 12, wherein an antimicrobial agent or probiotic agent is used to at least partially eradicate the bacterial overgrowth or prevent further bacterial overgrowth.

14. The method of Claim 13, wherein the probiotic agent is a species of *Bifidobacterium* or *Lactobacillus*.

15. The method of Claim 13, wherein the probiotic agent is *Bifidobacterium sp.*, *Lactobacillus acidophilus*, *Lactobacillus rhamnosus*, *Lactobacillus plantarum*, *Lactobacillus reuteri*, *Lactobacillus paracasei subsp. paracasei*, or *Lactobacillus casei* Shirota.

16. The method of Claim 13, wherein the antimicrobial agent is an antibiotic.

17. The method of Claim 13, wherein the antimicrobial agent is neomycin, metronidazole, teicoplanin, ciprofloxacin, doxycycline, tetracycline, augmentin, cephalexin, penicillin, ampicillin, kanamycin, rifamycin, rifaximin, or vancomycin.

18. The method of Claim 13, wherein the antimicrobial agent is a 4-amino salicylate compound or a 5-aminosalicylate compound.

19. The method of Claim 13, wherein the probiotic agent comprises an inoculum of a species or strain of *Bifidobacterium* or *Lactobacillus*.

20. The method of Claim 13, wherein the probiotic agent is *Bifidobacterium sp.*, *Lactobacillus acidophilus*, *Lactobacillus rhamnosus*, *Lactobacillus plantarum*, *Lactobacillus reuteri*, *Lactobacillus paracasei subsp. paracasei*, or *Lactobacillus casei* Shirota.

21. The method of Claim 12, wherein an intestinal lavage or enema is used to at least partially eradicate the bacterial overgrowth.

22. The method of Claim 12, wherein the bacterial overgrowth is at least partially eradicated by increasing the human subject's phase III interdigestive intestinal motility.

23. The method of Claim 22, wherein increasing the human subject's phase III interdigestive intestinal motility is accomplished by modifying the human subject's diet or by administering to the human subject a chemical prokinetic agent, whereby phase III interdigestive intestinal motility of the human subject is increased.

24. The method of Claim 23, wherein the prokinetic agent is a peptide, a macrolide compound, a bile acid, a bile salt, a cholinergic compound, a dopamine antagonist, a nitric oxide altering agent, a 5-HT receptor antagonist, a neuroleptic agent, a kappa agonist, or an antihistamine except ranitidine, famotidine, or nizatidine.

25. The method of Claim 23, wherein the prokinetic agent is cisapride, metoclopramide, domperidone, bethanechol, erythromycin, azithromycin, nomega-nitro-L-arginine methylester, or N-

monomethyl-L-arginine, ondansetron, alosetron, promethazine, meclizine, prochlorperazine, chlorpromazine, haloperidol, or fedotozine.

26. The method of Claim 24, wherein the bile acid is ursodeoxycholic acid, chenodeoxycholic acid or a derivative of either of these, and the bile salt is a sodium or potassium salt of ursodeoxycholate or chenodeoxycholate, or of a derivative of either of these.

27. The method of Claim 12, wherein the suspected diagnosis is of irritable bowel syndrome, fibromyalgia, chronic fatigue syndrome, depression, attention deficit/hyperactivity disorder, or an autoimmune disease; and further comprising administering to said human subject an antagonist of a pro-inflammatory cytokine or an antibody that specifically binds an inflammatory cytokine, substantially simultaneously with or after at least partially eradicating small intestinal bacterial overgrowth in the human subject.

28. The method of Claim 27, wherein the pro-inflammatory cytokine is TNF-α, IL-1α, IL-1β, IL-6, IL-8, IL-12, or LIF.

29. The method of Claim 12, further comprising administering to said human subject an anti-inflammatory cytokine or an agonist thereof, substantially simultaneously with or after at least partially eradicating small intestinal bacterial overgrowth in the human subject.

30. The method of Claim 29, wherein the anti-inflammatory cytokine is IL-4, IL-10, IL-11, or TGF-β.

31. A kit for the diagnosis or treatment of irritable bowel syndrome, fibromyalgia, chronic fatigue syndrome, depression, attention deficit/hyperactivity disorder, an autoimmune disease, or Crohn's disease, comprising at least one breath sampling container, a pre-measured amount of a substrate, and instructions for a user in corroborating a suspected diagnosis of irritable bowel syndrome, fibromyalgia, chronic fatigue syndrome, depression, attention deficit/hyperactivity disorder, an autoimmune disease, or Crohn's disease and in the treatment thereof by detecting and treating small intestinal bacterial overgrowth.

32. The kit of Claim 31, wherein the pre-measured substrate is isotope-labeled or poorly digestible by a human.

33. The kit of Claim 31, wherein the pre-measured substrate is glucose, lactose, lactulose or xylose.

34. The kit of Claim 31, wherein the pre-measured substrate is a sugar.

35. The kit of Claim 31, further comprising an antimicrobial agent or probiotic agent.

36. The kit of Claim 35, wherein the antimicrobial agent is an antibiotic.

37. The kit of Claim 35, wherein the antimicrobial agent is neomycin, metronidazole, teicoplanin, ciprofloxacin, doxycycline, tetracycline, augmentin, cephalexin, penicillin, ampicillin, kanamycin, rifamycin, rifaximin, vancomycin, or a 4- or 5-aminosalicylate compound.

38. The kit of Claim 35, wherein the probiotic agent comprises an inoculum of a species or strain of *Bifidobacterium* or *Lactobacillus*.

39. The kit of Claim 35, wherein the probiotic agent is *Bifidobacterium sp.*, *Lactobacillus acidophilus*, *Lactobacillus rhamnosus*, *Lactobacillus plantarum*, *Lactobacillus reuteri*, *Lactobacillus paracasei subsp. paracasei*, or *Lactobacillus casei* Shirota.

40. The kit of Claim 31, further comprising a prokinetic agent.

41. The kit of Claim of Claim 40, wherein the prokinetic agent is a peptide, a macrolide compound, a bile acid, a bile salt, a cholinergic compound, a dopamine antagonist, a nitric oxide altering agent, a 5-HT receptor antagonist, a neuroleptic agent, a kappa agonist, or an antihistamine except ranitidine, famotidine, or nizatidine.

42. The kit of Claim 41, wherein the bile acid is ursodeoxycholic acid, chenodeoxycholic acid or a derivative of either of these, and the bile salt is a salt of ursodeoxycholate or chenodeoxycholate, or of a derivative of either of these.

43. The kit of Claim of Claim 40, wherein the prokinetic agent is cisapride, metoclopramide, domperidone, bethanechol, erythromycin, azithromycin, nomega-nitro-L-arginine methylester, or N-monomethyl-L-arginine, ondansetron, alosetron, scopalamine, promethazine, meclizine, prochlorperazine, chlorpromazine, haloperidol, or fedotozine.

44. The kit of Claim of Claim 31, further comprising an antagonist of a pro-inflammatory cytokine or an antibody that specifically binds a pro-inflammatory cytokine.

45. The kit of Claim of Claim 44, wherein the pro-inflammatory cytokine is TNF-α, IL-1α, IL-1β, IL-6, IL-8, IL-12, or LIF.

46. The kit of Claim 31, further comprising an anti-inflammatory cytokine or an agonist thereof.

47. The kit of Claim 46, wherein the anti-inflammatory cytokine is IL-4, IL-10, IL-11, or TGF-β.

48. The kit of Claim 31, further comprising an agent that modifies afferent neural feedback or sensory perception.

49. The kit of Claim 48, wherein the agent that modifies afferent neural feedback or sensory perception is a 5-HT receptor antagonist, an opiate agonist, peppermint oil, cisapride, a dopamine antagonist, an antidepressant agent, or an anxiolytic agent.

50. The kit of Claim 49, wherein the dopamine antagonist is domperidone, the opiate agonist is fedotozine, and the 5-HT receptor antagonist is ondansetron or alosetron.

51. The kit of Claim 49, wherein the antidepressant agent is a tricyclic antidepressant, tetracyclic antidepressant, a serotonin re-uptake inhibitor, a monoamine oxidase inhibitor, trazodone, venlafaxine, mirtazapine, nefazodone, or bupropion.

52. The kit of Claim 51, wherein the tricyclic antidepressant is amitriptyline and the tetracylic antidepressant is maprotiline.

53. The kit of Claim 51, wherein the monoamine oxidase inhibitor is phenelzine.

54. The kit of Claim 51, wherein the serotonin re-uptake inhibitor is fluoxetine or sertraline.

55. The kit of Claim 49, wherein the anxiolytic agent is a benzodiazepine compound.

56. The method of Claim 12, wherein the symptom is hyperalgesia related to SIBO.

57. The method of Claim 56, further comprising alleviating or improving the hyperalgesia related to SIBO by administering an agent that modifies afferent neural feedback or sensory perception.

58. The method of Claim 57, wherein the agent that modifies afferent neural feedback or sensory perception is a 5-HT receptor antagonist, an opiate agonist, peppermint oil, cisapride, a dopamine antagonist, an antidepressant agent, an anxiolytic agent, or a combination of any of these.

59. The method of Claim 58, wherein the dopamine antagonist is domperidone.

60. The method of Claim 58, wherein the opiate agonist is fedotozine.

61. The method of Claim 58, wherein the 5-HT receptor antagonist is ondansetron or alosetron.

62. The method of Claim 58, wherein the antidepressant agent is a tricyclic antidepressant, tetracyclic antidepressant, a serotonin re-uptake inhibitor, a monoamine oxidase inhibitor, trazodone, venlafaxine, mirtazapine, nefazodone, or bupropion.

63. The method of Claim 62, wherein the tricyclic antidepressant is amitriptyline and the tetracylic antidepressant is maprotiline.

64. The method of Claim 62, wherein the monoamine oxidase inhibitor is phenelzine.

65. The method of Claim 62, wherein the serotonin re-uptake inhibitor is fluoxetine or sertraline.

66. The method of Claim 58, wherein the anxiolytic agent is a benzodiazepine compound.